JOURNAL OF THEORETICAL BIOLOGY

Chief Editor: J. F. DANIELLI
Associate Editor: L. WOLPERT

Editorial Board:
E. A. BARNARD
H. BREMERMANN
M. CALVIN
J. D. COWAN
N. GOEL
B. GOODWIN
J. MAYNARD SMITH
E. W. TAYLOR
M. YČAS
J. Z. YOUNG

VOLUME 61

September 1976

ACADEMIC PRESS

London New York San Francisco

Copyright © 1976, by Academic Press Inc. (London) Ltd

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

Contents of Volume 61

Number 1, 7 September 1976

LADDE, G. S., Stability of Mode Ecosystems with Time-delay . . 1

KAPUR, P., GHOSH, P. and NATH, N. G., Stability, Controllability and Observability of Arterial Circulation 15

LEWIS, R. W., Mucus Globule Membrane: An Hypothesis Concerning its Role in Determining the Viscosity of Mucus. . . . 21

MAKOWSKI, L., A Physical Basis for Red Cell Membrane Elasticity . 27

MAKOWSKI, L., A Phase Transition Model for Hemolysis . . 47

TORRE, V., A Theory of Synchronization of Heart Pace-maker Cells . 55

YAGIL, G., Isotope Exchange in Biochemical Networks Application of an Electric Circuit Technique to a Biological Reaction System . 73

BUTLER, L. A., LONGO, L. D. and POWER, G. G., Placental Blood Flows and Oxygen Transfer During Uterine Contractions: A Mathematical Model 87

OFFNER, F. F. and KIM, S. H., Conformational Effects on the Activation Free Energy of Diffusion Through Membranes as Influenced by Electric Fields 94

OFFNER, F. F. and KIM, S. H., Role of Ionic Adsorption in the Excitable Membrane 113

GERO, A. and CAPETOLA, R. J., Exploration of Drug Action on a Morphine Receptor by Methods of Enzyme Kinetics . . 129

BRUNI, C., GERMANI, A., KOCH, G. and STROM, R., Derivation of Antibody Distribution from Experimental Binding Data . . 143

STUBBLEFIELD, E. and DENNIS, C. M., The Simulation of Thymidine Kinase Enzyme Kinetics in Cultured Cells Using the Computer Language Cellism 171

HO, N. F. H., PARK, J., MOROZOWICH, W. and HIGUCHI, W. I., A Physical Model for the Simultaneous Membrane Transport and Metabolism of Drugs 185

IMAI, H. T., Further Evidence and Biological Significance for Non-random Localization of the Centromere on Mammalian Chromosomes 195

DOERNER, K. JR., Some Stress-Strain Relationships of Cellular Cleavage and Noncleavage 205

TALLARIDA, R. J., LASKIN, O. L. and JACOB, L. S., Perturbation of Drug Receptor Equilibrium in the Presence of Competitive Blocking Agents 211

DRAGOMIR, C. T., BARBIER, A. and UNGUREANU, D., A New Hybrid Theory of Muscle Contraction 221

LETTERS TO THE EDITOR

REIJNDERS, L., The Origin of Endosymbiotic Nitrogen Fixation by *Rhizobium* 245

Number 2, 21 September 1976

KAUS, P., Possible Adaptive Values of the Resonant Slave in Biological Clocks 249

HARRIS, A. K., Is Cell Sorting Caused by Differences in the Work of Intercellular Adhesion?: A Critique of the Steinberg Hypothesis . 267

DIAMOND, P., Domains of Stability and Resilience for Biological Populations Obeying Difference Equations 287

FRIEDMAN, M. H., The Effect of Membrane Heterogeneity on the Predictability of Fluxes, with Application to the Cornea . . 307

DANCIS, B. M., Ring Theory II. Fractional Tandem Model . . 329

SILVER, I. L., The Dynamics of a Discrete Geotropic Sensor Subject to Rotation-induced Gravity Compensation 353

STREILEIN, J. W. and READ, C. B. A Mathematical Model in Immunoregulation Where the Spleen Has a Pivotal Role . . . 363

MĂRGINEANU, D-G., Water Distribution in Tissues: A Compartmental Analysis and Some Testing Criteria 377

BASS, L., KEIDING, S., WINKLER, K. and TYGSTRUP, N., Enzymatic Elimination of Substrates Flowing Through the Intact Liver . 393

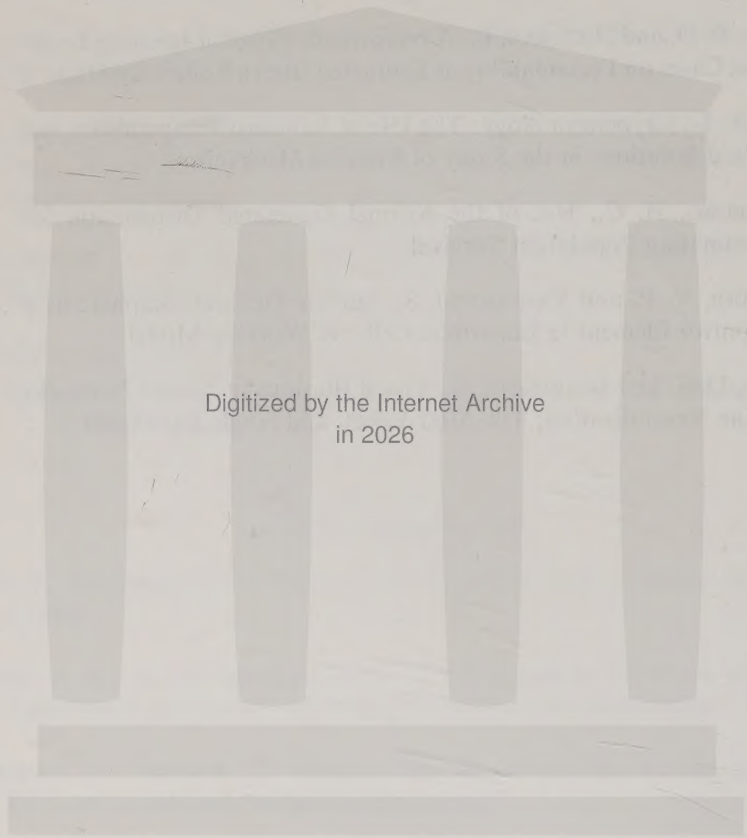
GUPTA, P. D. and HICKMAN, L., A Note on the Effect of Ignoring Drop-out Cases on Fecundability as Estimated from a Follow-up Study . 411

FINK, A. L., Cryoenzymology: The Use of Sub-zero Temperatures and Fluid Solutions in the Study of Enzyme Mechanisms . . 419

ROMESBURG, H. C., Use of the Normal Generated Distribution for Estimating Population Survival 447

CHIARUGI, V. P. and VANNUCCHI, S., Surface Heparan Sulphate as a Control Element in Eukariotic Cells: A Working Model . . 459

LEVINE, D. S. and GROSSBERG, S., Visual Illusions in Neural Networks Line Neutralization, Tilt After Effect, and Angle Expansion . 477



Digitized by the Internet Archive
in 2026

https://archive.org/details/journal-of-theoretical-biology_1976-09_61_contents

Index to Volume 61

Barbier, A. (see Dragomir, C. T.), 221
Bass, L., Keiding, S., Winkler, K. and Tygstrup, N., Enzymatic elimination of substrates flowing through the intact liver, 393
Bruni, C., Germani, A., Koch, G. and Strom, R., Derivation of antibody distribution from experimental binding data, 143
Butler, L. A., Longo, L. D. and Power, G. G., Placental blood flows and oxygen transfer during uterine contractions: a mathematical model, 87

Capetola, R. J. (see Gero, A.), 129
Chiarugi, V. P. and Vannucchi, S., Surface heparan sulphate as a control element in eukariotic cells: a working model, 459
Conformational effects on the activation free energy of diffusion through membranes as influenced by electric fields, 94
Cryoenzymology: the use of sub-zero temperatures and fluid solutions in the study of enzyme mechanisms, 419

Dancis, B. M., Ring theory II. Fractional tandem model, 329
Dennis, C. M. (see Stubblefield, E.), 171
Derivation of antibody distribution from experimental binding data, 143
Diamond, P., Domains of stability and resilience for biological populations obeying difference equations, 287
Doerner, K. Jr., Some stress-strain relationships of cellular cleavage and non-cleavage, 205
Domains of stability and resilience for biological populations obeying difference equations, 287
Dragomir, C. T., Barbier, A. and Ungureanu, D., A new hybrid theory of muscle contraction, 221
Dynamics of a discrete geotropic sensor subject to rotation-induced gravity compensation, 353

Effect of membrane heterogeneity on the predictability of fluxes, with application to the cornea, 307
Enzymatic elimination of substrates flowing through the intact liver, 393
Exploration of drug action on a morphine receptor by methods of enzyme kinetics, 129

Fink, A. L., Cryoenzymology: the use of sub-zero temperatures and fluid solutions in the study of enzyme mechanisms, 419
Friedman, M. H., The effect of membrane heterogeneity on the predictability of fluxes, with application to the cornea, 307
Further evidence and biological significance for non-random localization of the centromere on mammalian chromosomes, 195

Germani, A. (see Bruni, C.), 143
Gero, A. and Capetola, R. J., Exploration of drug action on a morphine receptor by methods of enzyme kinetics, 129

GHOSH, P. (see KAPUR, P.), 15
GROSSBERG, S. (see LEVINE, D. S.), 477
GUPTA, P. D. and HICKMAN, L., A note on the effect of ignoring drop-out cases on fecundability as estimated from a follow-up study, 411

HARRIS, A. K., Is cell sorting caused by differences in the work of intercellular adhesion?: a critique of the Steinberg hypothesis, 267
HICKMAN, L. (see GUPTA, P. D.), 411
HIGUCHI, W. I. (see HO, N. F. H.), 185
HO, N. F. H., PARK, J., MOROZOWICH, W. and HIGUCHI, W. I., A physical model for the simultaneous membrane transport and metabolism of drugs, 185

IMAI, H. T., Further evidence and biological significance for non-random localization of the centromere on mammalian chromosomes, 195
Is cell sorting caused by differences in the work of intercellular adhesion?: a critique of the Steinberg hypothesis, 267
Isotope exchange in biochemical networks application of an electric circuit technique to a biological reaction system, 73

JACOB, L. S. (see TALLARIDA, R. J.), 211

KAPUR, P., GHOSH, P. and NATH, N. G., Stability, controllability and observability of arterial circulation, 15
KAUS, P., Possible adaptive values of the resonant slave in biological clocks, 249
KEIDING, S. (see BASS, L.), 393
KIM, S. H. (see OFFNER, F. F.), 94
KIM, S. H. (see OFFNER, F. F.), 113
KOCH, G. (see BRUNI, C.), 143

LADDE, G. S., Stability of mode ecosystems with time-delay, 1
LASKIN, O. L. (see TALLARIDA, R. J.), 211
LEVINE, D. S. and GROSSBERG, S., Visual illusions in neural networks line neutralization, tilt after effect, and angle expansion, 477
LEWIS, R. W., Mucus globule membrane: an hypothesis concerning its role in determining the viscosity of mucus, 21
LONGO, L. D. (see BUTLER, L. A.), 87

MAKOWSKI, L., A phase transition model for hemolysis, 47
MAKOWSKI, L., A physical basis for red cell membrane elasticity, 27
MĂRGINEANU, D-G., Water distribution in tissues: a compartmental analysis and some testing criteria, 377
Mathematical model in immunoregulation where the spleen has a pivotal role, 363
MOROZOWICH, W. (see HO, N. F. H.), 185
Mucus globule membrane: an hypothesis concerning its role in determining the viscosity of mucus, 21

NATH, N. G. (see KAPUR, P.), 15

New hybrid theory of muscle contraction, 221
Note on the effect of ignoring drop-out cases on fecundability as estimated from a follow-up study, 411

OFFNER, F. F. and KIM, S. H., Conformational effects on the activation free energy of diffusion through membranes as influenced by electric fields, 94
OFFNER, F. F. and KIM, S. H., Role of ionic adsorption in the excitable membrane, 113
Origin of endosymbiotic nitrogen fixation by *Rhizobium* (letter), 245

PARK, J. (see HO, N. F. H.), 185
Perturbation of drug receptor equilibrium in the presence of competitive blocking agents, 211
Phase transition model for hemolysis, 47
Physical basis for red cell membrane elasticity, 27
Physical model for the simultaneous membrane transport and metabolism of drugs, 185
Placental blood flows and oxygen transfer during uterine contractions: a mathematical model, 87
Possible adaptive values of the resonant slave in biological clocks, 249
POWER, G. G. (see BUTLER, L. A.), 87

READ, C. B. (see STREILIN, J. W.), 363
REIJNDERS, L., The origin of endosymbiotic nitrogen fixation by *Rhizobium*, 245
Ring theory II. Fractional tandem model, 329
Role of ionic adsorption in the excitable membrane, 113
ROMESBURG, H. C., Use of the normal generated distribution for estimating population survival, 447

SILVER, I. L., The dynamics of a discrete geotropic sensor subject to rotation-induced gravity compensation, 353
Simulation of thymidine kinase enzyme kinetics in cultured cells using the computer language Cellism, 171
Stability, controllability and observability of arterial circulation, 15
Stability of mode ecosystems with time-delay, 1
STREILEIN, J. W. and READ, C. B., A mathematical model in immunoregulation where the spleen has a pivotal role, 363
Stress-strain relationships of cellular cleavage and noncleavage, 205
STROM, R. (see BRUNI, C.), 143
STUBBLEFIELD, E. and DENNIS, C. M., The simulation of thymidine kinase enzyme kinetics in cultured cells using the computer language Cellism, 171
Surface heparan sulphate as a control element in eukariotic cells: a working model, 459

TALLARIDA, R. J., LASKIN, O. L. and JACOB, L. S., Perturbation of drug receptor equilibrium in the presence of competitive blocking agents, 211
Theory of synchronization of heart pace-maker cells, 55
TORRE, V., A theory of synchronization of heart pace-maker cells, 55
TYGSTRUP, N. (see BASS, L.), 393

UNGUREANU, D. (see DRAGOMIR, C. T.), 221
Use of the normal generated distribution for estimating population survival, 447

VANNUCCHI, S. (see CHIARUGI, V. P.), 459
Visual illusions in neural networks line neutralization, tilt after effect, and angle expansion, 477

Water distribution in tissues: a compartmental analysis and some testing criteria, 377
WINKLER, K. (see BASS, L.), 393

YAGIL, G., Isotope exchange in biochemical networks application of an electric circuit technique to a biological reaction system, 73